OPEN PEER REVIEW

Administrative Organization of State Science and Technology Policies for Economic Development in Iraq

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1. Round 1

1.1. Reviewer 1

Reviewer:

The paragraph stating that “For Iraq, the relationship between science and technology and economic development is particularly significant because the country's economic structure remains strongly dependent on oil revenue” identifies an appropriate development problem, but the argument remains largely qualitative. The article should provide a more systematic analytical explanation of how hydrocarbon dependence creates specific constraints for science and technology policymaking. For example, the authors should discuss whether oil dependence influences public R&D financing, private-sector incentives, labor-market structures, innovation demand, fiscal volatility, or the concentration of government expenditure. Even without adding extensive statistical analysis, the manuscript should specify the causal channels through which the rentier economic structure affects the administrative organization of science and technology policies.

In the Introduction paragraph beginning “The challenge is intensified by the growing importance of digital technologies in public administration and economic activity,” the discussion of digital sovereignty, cybersecurity, data governance, and interoperable platforms is relevant, but the relationship of these issues to the central research question should be made more explicit. The manuscript currently risks expanding “science and technology policy” into a very broad discussion of digital governance. The authors should explain whether digital governance is treated as one component of science and technology administration, an enabling infrastructure for innovation policy, or a separate regulatory domain. This clarification would prevent conceptual expansion beyond the article’s stated focus and would help distinguish essential material from the less relevant internet and information-law content deliberately excluded from the thesis.

In the paragraph beginning “Science and technology policy also depends on administrative coordination,” the manuscript appropriately adopts a network-governance perspective, but the institutional mechanism remains abstract. The authors should

specify how horizontal coordination would operate among Iraqi ministries and agencies and how vertical coordination would operate between federal and subnational authorities. Possible institutional mechanisms include interministerial committees, shared databases, joint budget programs, legally mandated consultation procedures, common performance indicators, cross-agency project teams, or a national council with binding coordination authority. The current discussion establishes why coordination is necessary but not how it should actually be institutionalized.

In the paragraph beginning "Policy implementation is often more difficult than policy formulation," the manuscript correctly identifies implementation capacity as a major issue, but it should distinguish organizational capacity from individual technical expertise. Institutional capacity includes budgetary autonomy, administrative procedures, authority, information systems, continuity of personnel, interagency relationships, and monitoring structures, whereas individual capacity concerns the competence of civil servants and specialists. The article currently emphasizes the need for personnel capable of evaluating research, managing grants, and assessing technologies but gives less attention to organizational conditions that allow such personnel to act effectively. Both dimensions should be incorporated into the analysis.

The section on Iraq begins with the assertion that "The Iraqi state possesses universities, ministries, research centers, technical institutions, regulatory bodies, and public enterprises capable of contributing to scientific and technological development." This is a central empirical claim, but the discussion does not map the relevant Iraqi institutions with sufficient specificity. The article would be much stronger if the authors identified the principal governmental and research bodies involved, described their formal mandates, and indicated areas of overlapping or fragmented responsibility. Because the article concerns "administrative organization," an institutional mapping is not optional; it is fundamental to demonstrating how the current system operates and where coordination deficiencies occur.

Authors revised the manuscript and uploaded the document.

1.2. Reviewer 2

Reviewer:

The final paragraph of the Introduction states that "The central problem addressed in this article is consequently the administrative organization of Iraqi state policies in science and technology and the extent to which this organization can contribute to economic development." This paragraph should be revised to formulate a more precise research question or set of research questions. At present, the problem, objective, proposition, and methodology are presented together but are not sufficiently differentiated. The manuscript would benefit from explicitly stating whether it seeks to describe the current administrative architecture, evaluate its deficiencies, explain its consequences for economic development, or design a normative reform model. These are related but analytically different objectives, and greater clarity would improve alignment between the Introduction, substantive analysis, and Conclusion.

In the methodological statement that "The analysis follows a descriptive and analytical approach based on the conceptual, legal, and institutional framework developed in the underlying research," the research method is insufficiently specified for a scientific journal article. The authors should explain what materials were analyzed, how relevant material from the thesis was selected, what criteria were used to exclude irrelevant material, and how the administrative and legal analysis was conducted. If the article is a doctrinal and policy-analysis study, this should be stated explicitly. If comparative insights are retained from the thesis, the basis of comparison should also be identified. A short but rigorous methodological explanation would substantially improve reproducibility and scholarly transparency.

In the second section, the paragraph beginning "Science and technology policy can be understood as the organized set of governmental decisions, institutional arrangements, financial mechanisms, legal rules, and administrative instruments" provides the article's most important conceptual definition. However, this definition should be refined by distinguishing science policy, technology policy, and innovation policy. These domains overlap but are not identical: science policy typically concerns knowledge production and research capacity, technology policy concerns development and diffusion of technological capabilities, and innovation policy concerns commercialization, organizational change, market creation, and interaction among

innovation actors. The manuscript currently combines all three under one broad formulation. A clearer differentiation would allow the later institutional recommendations to be tied to specific policy functions.

The paragraph beginning “Public policymaking in this field begins with accurate diagnosis” introduces evidence-based policymaking but does not fully explain what an Iraqi diagnostic framework should measure. The authors should identify a coherent group of indicators relevant to administrative organization, such as R&D expenditure, research personnel, university–industry contracts, patenting and licensing activity, technology-transfer outputs, innovative public procurement, start-up survival, private R&D participation, sectoral technology adoption, and interministerial coordination performance. The article repeatedly emphasizes evaluation and evidence, yet it does not establish a concrete measurement architecture. Specifying such indicators would make the proposed policy framework considerably more operational.

In the paragraph stating that “The formulation of policy requires a clear distinction between objectives and instruments,” the manuscript provides a useful list of potential policy tools, including grants, tax incentives, procurement, standards, licensing, and intellectual-property rules. However, the authors should distinguish between supply-side and demand-side innovation instruments and explain which are most appropriate for Iraq’s institutional conditions. Grants, research infrastructure, and training primarily strengthen technological supply, whereas innovative procurement, standards, and market regulation can stimulate demand. This distinction is particularly important because the article later argues that weak market demand is one reason university research remains disconnected from economic activity. A policy-mix framework would make this argument more coherent.

Authors revised the manuscript and uploaded the document.

2. Revised

Editor’s decision: Accepted.
Editor in Chief’s decision: Accepted.